


U.S.C. § 102(e) as anticipated by U.S. Patent 5,923,997 to Mitnaga. In response, claims 5-9, 16, 20 and 40-44 have been amended herewith to recite a method of manufacturing an electroluminescence display device rather than a semiconductor device. Support for this amendment can be found in embodiment 5 of the specification beginning on page 22. In addition, claims 5, 16, 40 and 41 have been further amended to recite a reverse stagger type TFT, which is disclosed in Embodiment 4 of the specification beginning on page 20. It is respectfully submitted that Mitnaga fails to disclose or suggest an "electroluminescence display device" let alone a method of manufacturing such a device. Thus, since Mitnaga fails to disclose each and every limitation of the present claims, it is submitted that the rejection of claims 5-6, 16-18, 20-22, 24-38 and 40-44 as anticipated by Mitnaga has been overcome and favorable reconsideration is requested.

For all of the above reasons, the present application is believed to be in condition for allowance and favorable reconsideration is respectfully requested. If the Examiner feels further discussions would expedite prosecution of this application, he is invited to contact the undersigned.

Respectfully submitted,


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Marked-Up Version Showing Amendments to Claims

5. (Amended) A method of manufacturing [a semiconductor device] an electroluminescence display device, comprising the steps of:

forming a gate electrode over an insulating surface;

forming a gate insulating film over the gate electrode;

forming a semiconductor film comprising amorphous silicon over the gate insulating film;

crystallizing the semiconductor film by a heat treatment while a promoting material for facilitating crystallization is retained on the semiconductor film;

removing the promoting material for facilitating crystallization from a surface of the semiconductor film after the heat treatment; and

promoting crystallinity of the crystallized semiconductor film by irradiation of laser or intense light,

wherein the promoting material comprises one or more elements selected from the group consisting of group 14 elements.

6. (Amended) A method of manufacturing [a semiconductor device] an electroluminescence display device according to claim 5, wherein said promoting material is germanium.

7. (Amended) A method of manufacturing [a semiconductor device] an electroluminescence display device, comprising the steps of:

applying a solution, in which a simple substance of a catalytic element for facilitating crystallization of amorphous silicon film or a compound containing the catalytic element is dissolved or dispersed, on a semiconductor film comprising amorphous silicon;

baking said semiconductor film to form a film comprising said catalytic element on said semiconductor film;

crystallizing the amorphous silicon film by carrying out a heat treatment;

removing said film comprising said catalytic element from a surface of the semiconductor film after the heat treatment; and

promoting crystallinity by irradiation of laser light or intense light, wherein a kind of or plural kinds of elements selected from elements in group 14 are used as the catalytic element.

8. (Amended) A method of manufacturing [a semiconductor device] an electroluminescence display device according to claim 7, wherein germanium is used as the catalytic element.

9. (Amended) A method of manufacturing [a semiconductor device] an electroluminescence display device according to claim 8, wherein the compound containing the catalytic element is at least one selected from the group consisting of germanium bromide, germanium chloride, germanium iodide, germanium oxide, germanium sulphide, germane, germane acetate, tris (2,4-pentanedionate) germanium perchlorate, tetramethylgermane, tetraethylgermane, tetraphenylgermane, and hexaethyl germanium.

16. (Amended) A method of manufacturing [a semiconductor device] an electroluminescence display device comprising the steps of:

forming a gate electrode over an insulating surface;

forming a gate insulating film over the gate electrode;

forming a semiconductor film comprising amorphous silicon [on an insulating surface] over the gate insulating film;

forming a film comprising germanium in contact with said semiconductor film by vapor phase deposition with a germanium compound gas;

heating said semiconductor film with said film comprising germanium to crystallize said semiconductor film; and

removing the film comprising germanium from a surface of said semiconductor film without changing a shape of said semiconductor film after the heating said semiconductor film.

20. (Amended) A method of manufacturing [a semiconductor device] an electroluminescence display device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

forming a film comprising germanium in contact with said semiconductor film by vapor phase deposition with a germanium compound gas;

heating said semiconductor film with said film comprising germanium to crystallize said semiconductor film;

removing the film comprising germanium from a surface of said semiconductor film without changing a shape of said semiconductor film after the heating said semiconductor film;

patterning the crystallized semiconductor film into at least one semiconductor island; and

forming a thin film transistor with said semiconductor island used as at least a channel forming region thereof.

40. (Amended) A method of manufacturing [a semiconductor device] an electroluminescence display device comprising the steps of:

forming a gate electrode over an insulating surface;

forming a gate insulating film over the gate electrode;

forming a semiconductor film comprising amorphous silicon [on an insulating surface] over the gate insulating film;

forming a film comprising germanium in contact with said semiconductor film by vapor phase deposition with a germanium compound gas;

heating said semiconductor film with said film comprising germanium to crystallize said semiconductor film;

removing the film comprising germanium from a surface of said semiconductor film after the heating said semiconductor film; and

irradiating laser or intense light to said semiconductor film after the removing the film comprising germanium.

41. (Amended) A method of manufacturing [a semiconductor device] an electroluminescence display device, comprising the steps of:

forming a gate electrode over an insulating surface;

forming a gate insulating film over the gate electrode;

forming a semiconductor film comprising amorphous silicon over the gate insulating film;

crystallizing the semiconductor film by a heat treatment while a promoting material for facilitating crystallization is retained on the semiconductor film; and

removing the promoting material for facilitating crystallization on a surface of the semiconductor film without changing a shape of the semiconductor film after the heat treatment,

wherein the promoting material comprises one or more elements selected from the group consisting of group 14 elements.

42. (Amended) A method of manufacturing [a semiconductor device] an electroluminescence display device, comprising the steps of:

applying a solution, in which a simple substance of a catalytic element for facilitating crystallization of amorphous silicon film or a compound containing the catalytic element is dissolved or dispersed, on a semiconductor film comprising amorphous silicon;

baking said semiconductor film to form a film comprising said catalytic element on said semiconductor film;

crystallizing the amorphous silicon film by carrying out a heat treatment; and

removing said film comprising said catalytic element on a surface of the semiconductor film without changing a shape of the semiconductor film after the heat treatment,

wherein a kind of or plural kinds of elements selected from elements in group 14 are used as the catalytic element.

43. (Amended) A method of manufacturing [a semiconductor device] an electroluminescence display device, comprising the steps of:

forming a semiconductor film comprising amorphous silicon;

providing the semiconductor film with a promoting material for facilitating crystallization is retained on the semiconductor film;

crystallizing the semiconductor film by a heat treatment;

removing the promoting material from the crystallized semiconductor film after the

heat treatment;

promoting crystallinity of the crystallized semiconductor film by irradiation of laser or intense light after the removing the promoting material; and

patterning the crystallized semiconductor film to form at least one semiconductor island after irradiation of laser or intense light,

wherein the promoting material comprises one or more elements selected from the group 14 elements.

44. (Amended) A method of manufacturing [a semiconductor device] an electroluminescence display device according to claim 43, wherein said promoting material is removed from a surface of the crystallized semiconductor film without changing a shape of the crystallized semiconductor film.